

Flying Ring*Lesson 1 of 3***Grade Level:** 5-8**Subject:** Technology, Science**Prep Time:** < 10 minutes**Activity Duration:** One Class Period**Materials Category:** Household Materials

National Education Standards				
Science	Mathematics	Technology		Geography
		ISTE	ITEA	
6a			9c, 10b	

Objective: Build a nontraditional aircraft and examine its flight characteristics.

Materials:

Sheets of paper (8½ by 11 inches)

Related Links:*NASA Site used for derivation of Lesson Plan*

Blended Wing Body Airliner Bookmark

<http://spacelink.nasa.gov/products/Blended.Wing.Body.Bookmark/>**The Flying Wing****Flying Ring***Teacher Sheets***Background**

NASA's Aerospace Research and Technology Base Program is developing technologies for a new type of aircraft that would be more economical and efficient than today's airliners. This revolutionary flying wing configuration, called the Blended Wing Body (BWB), has a thick airfoil-shaped fuselage section that combines the engines, wings, and body into a single lifting surface.

The BWB could carry as many as 800 passengers over 7,000 miles at a cruise speed of about 560 miles per hour. Compared to today's airliners, it would reduce fuel consumption, harmful emissions, operating cost, and noise levels. NASA is developing high-payoff technologies for a new generation of safe, environmentally compatible, and highly productive aircraft.

Airplanes of the future may look very different from those of today. Your students get to be engineers and experiment with a possible new wing type.

Additional information is available over the Internet at NASA's Aerospace site (<http://www.aerospace.nasa.gov/>).

Guidelines

1. Read the article "The Flying Wing." Discuss the radical new design of the Blended Wing Body.
2. It would be helpful to have a completed glider built for the students to refer to as they construct their own planes.
3. It takes some trial and error to fly the wing for long distances.
4. Challenge your students to experiment to see if they can control the flight direction and characteristics of their gliders.

Discussion / Wrap-up

1. Discuss whether or not this design could be used to build a full size aircraft. Why or why not?
2. Is it harder or easier to control the flight of the Flying Ring? Why? What would make it easier? Discuss the advantages of current airplane designs (stability, known technology, etc.).

Extensions

- Have flight competitions with different categories such as landing accuracy, distance challenges, etc.
- Build other nontraditional shaped planes to test fly.

Flying Ring

Student Sheets

Objective

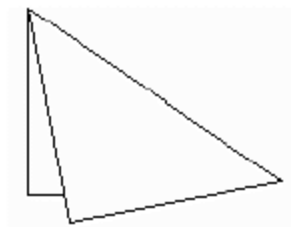
Build a non-traditional aircraft and examine its flight characteristics.

Materials

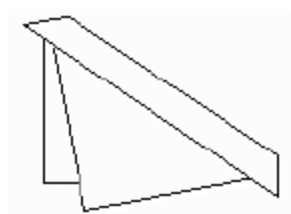
Sheet of paper (8.5 inches by 11 inches)

Procedure

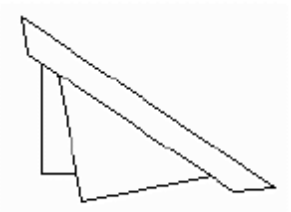
1. Fold paper diagonally as shown.



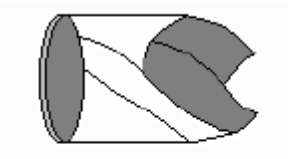
2. Make a 1/2-inch fold along the previously folded edge.



3. Make a second 1/2-inch fold.



4. Curl the ends of the paper to make a ring and tuck one end into the fold of the other.



5. Gently grasp the "V" between the two "crown points" with your thumbs and index finger and toss the glider lightly forward.

The Flying Wing

Flying Ring

Worksheet

Name: _____

1. Do you think that this design could be used to build full size airplanes? Why or why not?
2. Is it harder or easier to control the flight of the Flying Ring? Why or why not?
3. What make it easier or harder? What would you change to improve the performance of the Flying Ring?



From the NASA Explores Web Site, NASAexplores.com